ICT Utilization in the Department of Education's MATATAG Curriculum: A Study of Teachers' Competency and Challenges

Ronald B. Arzaga
Western Philippines University
ronald.arzaga01@deped.gov.ph

ABSTRACT

The rapid evolution of Information and Communication Technology (ICT) has significantly influenced education, making digital proficiency essential for effective teaching and learning. The MATATAG curriculum emphasizes integrating technology into education, but there is limited data on how teachers are actually utilizing ICT in the classroom. This study aims to fill that gap by examining the demographics, ICT use, and challenges faced by teachers implementing the MATATAG curriculum. The study reveals that most teachers are female, married, with a moderate level of teaching experience, and have attended ICT seminars. While system and internet technologies are commonly used for communication, resource sharing, and classroom management, more advanced digital tools and niche learning platforms are less frequently utilized. Teachers face several challenges, including inadequate infrastructure, insufficient training programs, lack of leadership in technology, and low ICT proficiency and confidence. The study finds that demographic factors such as age, civil status, and years of service significantly affect ICT utilization, while gender, education level, and prior ICT experience do not have a strong influence. Teachers with more ICT exposure, such as those who studied ICT-related coursework, tend to use digital tools more effectively. The findings suggest that improvements in school infrastructure, better teacher support systems, and enhanced training programs in ICT literacy and digital pedagogy are crucial. To strengthen ICT utilization within the MATATAG curriculum, the study recommends that educational institutions provide ongoing, hands-on professional development and clear ICT usage policies for teachers.

Keywords: *Information and Communication Technology (ICT), MATATAG Curriculum, ICT Utilization, Teacher Competency, Puerto Princesa City*

INTRODUCTION

The information revolution of the new millennium was driven by rapid Information, Communication and Technology development (Kubota et al., 2018). The way people live, interact, communicate, and do business have changed drastically. This process, called the "digital revolution," involves the switch from analog, electronic, and mechanical instruments to digital ones (Delgado et al., 2015). ICT covers a wide range of hardware, software, communication lines, and information management tools used to manage and analyze information in information societies (Addy, Hamian &Luthra, 2018). With computers and the Internet, more individuals can access knowledge faster, making the world a global village that can be reached with a finger (Dela Rosa, 2016). New technologies like AI and ICBM (IoT (Internet of Things), cloud computing, big data, and mobile) are expected to transform the industrial structure and social system.

e

Telecommunications and IT are among the international communities' many interests. ICT has changed our lifestyle and education (Almekhlafi and Abulibdeh, 2018). It is one of the most essential tools for adapting education to the information society (Mishra et al., 2018; Skryabin, 2015). In reality, international organizations have identified ICT skills as one of the 21st-century success skills (OECD, 2019a; UNESCO, 2016a; WEF, 2016). ICT skills were promoted and considered a right to education (Kim and Soog Lee, 2020). The UNDP sees ICT as a tool for educational advancement, whereas the ADB believes it can reduce poverty in Asia and the Pacific. ADB education ICT programs emphasize rural skills training. The World Bank promotes ICT availability and use to boost sustainable economic growth, service delivery, good governance, and social accountability. They have ICT initiatives that emphasize infrastructure, skill development, and ICT applications, particularly in education. Furthermore, UNESCO believes that ICT can help teacher education institutes; hence, it promotes ICT use in teacher education institutions through multi-stakeholder partnerships, teacher development communities of practice, policymaker capacity building, and international standards for teacher ICT competencies.

Globally, the use of technology to enhance learning and training is gaining momentum, addressing the spatial and temporal limitations of traditional education (Panigrahi et al., 2018). No nation can afford to ignore the need for ICT integration if it seeks to remain competitive and advance in the digital era (Chinasa & Onyinyechukwu, 2022). Studies by Lee (2018) and Hou et al. (2020) highlighted how modern society has evolved to the point where computer technology is embedded across various disciplines, creating new opportunities for growth.

As a result, global educational systems seek to develop students' digital competence. Computer literacy, including software development skills, has become a fundamental requirement for students, regardless of their field of study. Thus, the curriculum developed in educational centers has incorporated the acquisition of skills in utilizing technology to locate, evaluate, store, generate, present, and exchange information (Flores et al., 2017). National governments invest heavily in schools with the most advanced technologies and infrastructure and have urged schools to implement ICT-based instruction (OECD, 2015, 2019). Recognizing the growing importance of ICT in education, the Philippines has intensified efforts to integrate digital tools into learning environments. Various initiatives, such as summits on "Educational

Technology for School Managers," "ICT Integration in Teaching and Learning," and "Digital Transformation for the KID" (K–12 plus Alternative Learning System; ICT, DepEd), underscore the nation's commitment to leveraging ICT for improved student outcomes (Dar, 2017). To remain relevant in the digital age, educational institutions must develop and implement ICT standards that emphasize real-world applications, enabling students to apply acquired skills across different subject areas, collaborate with peers, and cultivate multiple intelligences.

In 2023, the Department of Education (DepEd), then headed by Vice President Sarah Duterte, launched the MATATAG curriculum as a reconfigured, decongested curriculum that aims to cultivate competent, job-ready, active, responsible, and patriotic citizens. It is a product of modern educational reforms that reflect the influence of technological advancements, globalization, and the changing dynamics of the educational landscape in the Philippines. It places a strong emphasis on preparing students for real-world challenges, stressing adaptability to the evolving job market—a central goal of a responsive curriculum.

Despite the introduction of the MATATAG curriculum that is designed to integrate technological advancements into Philippine education, a significant research gap exists concerning the actual utilization of Information and Communications Technology (ICT) within the revised curriculum's implementation. Studies are needed to assess the extent to which ICT tools and strategies are being effectively integrated into teaching and learning practices across different schools and regions, considering factors such as teacher training, access to technology, and the digital literacy of educators. The absence of robust data on ICT utilization hinders a comprehensive evaluation of the MATATAG curriculum's success and identifies critical areas for improvement in bridging the digital divide within the Philippine education system.

Given this context, this study aimed to examine the competency of MATATAG curriculum teachers in utilizing ICT for teaching and learning. As 21st-century education increasingly demands ICT proficiency, it is essential to assess teachers' self-perceived competency and the extent to which they utilize digital tools in their instructional practices. This study likewise investigated the challenges teachers face in incorporating ICT into education, providing valuable insights into the barriers that hinder effective technology integration.

The study examined teachers' readiness to integrate information and communication technology (ICT) in the implementation of the MATATAG curriculum in secondary public schools in the Philippines. It described the demographic profile of teaching personnel in terms of age, civil status, gender, educational attainment, years in service, exposure to ICT subjects, prior ICT experience, and ICT-related trainings attended. It also assessed the status of teachers' ICT utilization in terms of system and internet technologies, identified challenges in ICT utilization at both the teacher and school levels, and determined whether a significant relationship exists between teachers' demographic profile and their ICT utilization.

Theoretical Framework of the Study

This study relied on Bandura's Social Cognitive Theory (1986), which stressed self-efficacy's influence on behavior and performance. Beliefs regarding one's ability to plan and execute tasks affect decisions, effort, and tenacity in the face of adversity. Self-efficacy motivates teachers to work hard and improve despite challenges. According to Ghavifekr and Rosdy (2015), self-efficacy is people's perceptions of their ability to do tasks. Sharma and Srivastava (2019) added that these perceptions support consistent behavior and determination to succeed.

In this theoretical framework, ICT self-efficacy is a digital application of self-efficacy. It is a person's confidence in their computer and internet skills (Papastergiou, 2010). According to Ghavifekr and Rosdy (2015), Tsai and Tsai (2010) defined ICT self-efficacy in teachers as their ability to find, analyze, and convey information online. ICT self-efficacy is teachers' confidence in their abilities to navigate systems, use software, and use internet-based technologies to promote learning (Delgado et al., 2015). Thus, in the context of this study, understanding ICT self-efficacy is crucial because it affects the teachers' willingness to incorporate technology into instruction, a norm in modern schools. Through investigating the status of teachers' ICT utilization in the implementation of the MATATAG curriculum as well as the challenges they face, it is possible to understand their motivations in incorporating ICT in their everyday life.

Research Paradigm

Figure 1 presented the conceptual framework of the study. It consisted of three variables: independent, intervening, and dependent.
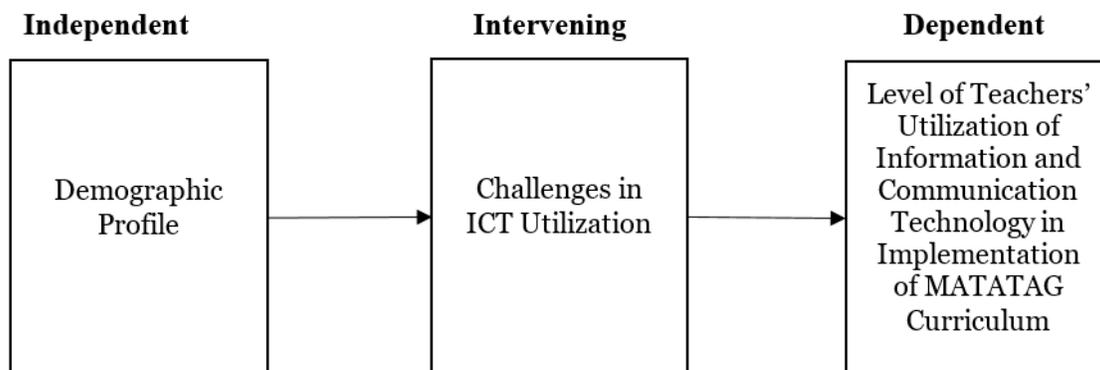

Figure 1. **The Research Paradigm of the Study Showing the Relationship of the Variables**

This research paradigm functioned as a visual representation that illustrated the interrelationships among the important variables being examined. The development process was initiated following a comprehensive examination of previous empirical and theoretical research. In this study, the independent variable was the

demographic profile of the respondents, while the intervening variables were the challenges that teachers faced in ICT utilization. Furthermore, the study measured the dependent variables by evaluating the teachers' utilization of Information and Communication Technology in implementing the MATATAG curriculum.

METHODS

Research Design

This study followed a descriptive-correlational design. Descriptive research was aimed at gathering and tabulating data to describe the demographic profile of teachers with respect to the utilization of ICT in performing their tasks in the educational process. The data were obtained from a random sample of teachers, which led to skewed responses and a potential bias toward positive feedback. The descriptive aspect of this study focused on characterizing the teachers' demographic profile, particularly in relation to their use of ICT tools. The researcher also examined the various challenges that the teachers faced as they used ICT in their daily work life. Along with the descriptive component, a correlational design was also used to investigate the connection between teachers' demographic profiles and their competency in utilizing ICT, including system and internet technologies. Finally, data from the survey participants were compiled, totaled, and organized into tables for analysis and interpretation. The interpretation of the data provided insights into the factors affecting ICT utilization and the overall competency of teachers in integrating technology into their teaching practices.

Respondents of the Study

The respondents consisted of school teachers who handled MATATAG curriculum subjects from different schools in the Roxas South District, including both elementary and secondary school teachers. The list of eligible teachers was provided by the district office. The sample population consisted of 106 teachers from various schools within the district. These teachers were randomly selected to participate in the research, as they played an essential role in supporting the educational process in their respective schools.

Locale of the Study

The study was conducted in Roxas South District in Roxas, Palawan, which consisted of various schools under the jurisdiction of the Schools Division of Palawan. The respondent group for this study was composed of educators or teachers. According to the data from the Roxas South District Office, the composition of the teachers was as follows: there are 83 female and 23 male teachers, with a total of 106 school teachers handling MATATAG curriculum subjects across 21 elementary schools, 5 secondary schools, and 1 integrated school.

In order to investigate and comprehend the specific utilization of ICT in the implementation of the MATATAG curriculum, the district where the researcher worked as full-time faculty was selected.

Familiarity with the research area as well as the heads of the different schools under the chosen district made data gathering process easier.
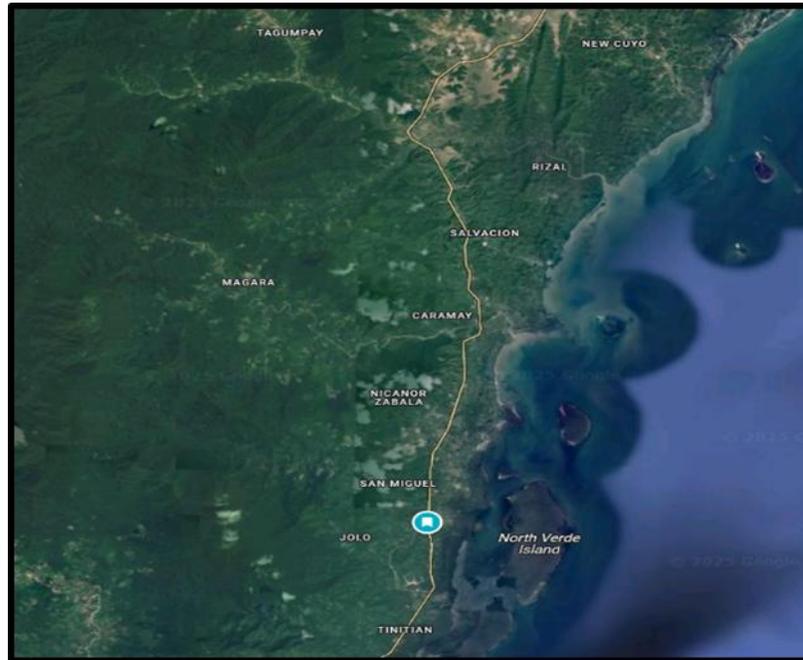

Figure 2. **Map of Roxas South District showing the study site**
Source: Google Map

Scope and Delimitation

The study was conducted in Roxas South District in Roxas, Palawan, which consisted of various schools under the jurisdiction of the Schools Division of Palawan. There were only 26 schools under the said district, which limited the number of teachers surveyed to this area. This study aimed to determine the teachers' ICT utilization in the implementation of the MATATAG Curriculum. It also investigated the challenges that every MATATAG curriculum subject teacher faced when utilizing ICT-related work in the classroom and school environment. In addition, the researcher determined whether the demographic profile had any discernible effect on the teachers' ICT utilization.

The study focused only on one respondent group: educators or teachers. According to the data from the Roxas South District Office, there were 83 female and 23 male teachers, with an overall total of 106 school teachers handling MATATAG curriculum subjects. Using Slovin's formula with a 95% confidence level, the study targeted 84 teachers in the district as respondents. An adapted-modified survey questionnaire consisting of three parts was utilized to collect the data.

Research Instrument

This study used the modified-adapted survey questionnaire to gather relevant data that answered the given problem statements. The questions included in this research were adapted and modified from various studies related to ICT utilization challenges among teachers, particularly those identified in the works of Hamalainen et al. (2021), Makki et al. (2018), and Ghavifekr and Rosdy (2015), in order to better suit the context of this study and the specific research objectives.

The questionnaire had three parts. Part I consisted of demographic profile questions for the target respondents, while Part II contained the statements that measured the teachers' ICT utilization in implementing the MATATAG Curriculum. These statements were evaluated by the teachers using the following scale: 5 - "Always", 4 - "Often", 3 - "Sometimes", 2 - "Rarely", and 1 - "Never". Lastly, Part III contained the challenges encountered by the respondents in utilizing ICT in implementing the MATATAG Curriculum. The written statements were given the following rating: 5 - "Always Encountered", 4 - "Often Encountered", 3 - "Sometimes Encountered", 2 - "Rarely Encountered", and 1 - "Seldom Encountered".

Data Collection Procedure

This study was reinforced with the necessary documents and communication letters from the Western Philippines University - College of Education for the Department of Education, particularly Roxas South District. The researcher first formally sought permission from the Public Schools District Supervisor (PSDS) of Roxas South District to conduct the data gathering before going to the secondary schools in the said district. Upon approval of the PSDS, the researcher subsequently requested permission from the different school heads before administering the survey in their schools.

Once the school heads had given their approval, the researcher personally administered data collection using the survey questionnaire. The purpose of the study was explained to the respondents as soon as they had given their consent to participate in the survey. The researcher willingly entertained their questions and clarified statements from the questionnaire that were not clear to them.

Data Treatment

After collecting the completed questionnaires, the researcher evaluated, coded, tallied, and reviewed the data. Data were processed using Microsoft Excel and SPSS (version 25). Descriptive statistics, such as frequency counts, percentages, and averages, were used to describe the socio-demographic profile of the respondents. A 5-point Likert scale was utilized to measure responses related to the utilization of ICT and the challenges faced in the study. Lastly, to test the hypothesis of no significant relationship between the two variables, the Pearson Product Moment Correlation test was applied to interval and ratio data.

RESULTS AND DISCUSSION

Demographic Profile of the Respondents

Age

The age distribution of the respondents indicated that 31% of the educators in the Roxas South district were middle-aged, specifically between 34 and 40 years old. This suggested that the participants were predominantly in their professional peak, presumably exhibiting a moderate to high level of expertise and career stability. This outcome corresponded with the research conducted by Samoraga & Abo (2025), which indicated that the majority of junior high school science teachers in Sultan Kudarat were aged between 31 and 40 years. In addition to this finding, Lopez and Ravana's (2025) study of high school teachers in the Schools Division of Zambales. found that most of them were "early middle-aged" women. This supports the patterns of age and gender distribution seen in other similar schools. These findings emphasized the importance of the 31-40-year-old age range as a crucial and predominant group within the secondary school teaching workforce. This group included people who were probably trying to balance their basic job duties with new leadership roles and ongoing professional growth. Conversely, the limited number of participants in the younger age group (20-26 years) indicated that fewer fresh graduates or early-career teachers participated in this study, as the majority of subjects within the MATATAG curriculum were allocated to experienced educators.

Civil Status

A large majority of the teachers who took the survey, 78.70%, were married. This means that most of them who took part presumably had both personal and work obligations, which may have changed how they employed Information and Communication Technology (ICT) in their teaching. Teachers who were married may have had more stable home life, which would have provided them with more time and energy to work on their professional development and training in ICT. This position not only influenced the teachers' personal lives but also affected their motivation and engagement at work, as connected to the study by N. Afiah et al., 2024. The Schools Division of Zambales conducted study that highlighted the married status of most early middle-aged educators and examined the impact of familial and marital factors on teachers' motivation and work engagement (Lopez & Ravana, 2025). Family responsibilities and support networks substantially impacted teachers' ability to manage occupational stress and maintain high levels of motivation. Familial support systems provide emotional resources that alleviated occupational challenges, hence enhancing teachers' commitment to their duties. This connection showed that demographic parameters, including marital status, were more than just background information; they also affected teachers' emotional and psychological engagement, which in turn affected how well they taught.

Gender

The statistics showed a clear gender gap: 75% of the sample are females, while only 25% are males. This disparity may have been due to larger changes in the teaching profession, where women are more likely to be in the workforce. The higher number of female participants may suggest that women were more engaged in continuous professional development, especially with the integration and utilization of ICT

technologies in schooling. The outcome was aligned with Martin's (2025) findings indicating that female educators were more inclined to utilize ICT tools or express favorable attitudes towards ICT integration. Nonetheless, other research indicated that gender disparities may be reduced with specialized training and enhanced access to digital resources. The fact that only 25% of the teachers in the sample are male suggests that male teachers in the area were less likely to take part in ICT-related professional development or that there were fewer male teachers teaching the MATATAG curriculum.

Educational Attainment

The findings revealed that 62.96% of the teachers were college graduates, indicating that the majority of respondents possessed at least a bachelor's degree, which is a fundamental requirement for being a licensed professional teacher. This level of educational attainment suggests that most teachers had formal academic preparation that included exposure to pedagogical foundations, subject specialization, and introductory ICT-related competencies. Recent studies emphasize that teachers' professional preparation is a critical prerequisite for ICT integration, as it provides the baseline technological and pedagogical knowledge necessary for effective classroom implementation (Kundu et al., 2020). Teachers who receive structured academic training are more likely to demonstrate readiness and confidence in using digital tools to support instruction.

In addition, 37.04% of the respondents reported having earned a master's degree, reflecting a strong commitment to professional growth and continuous learning. Advanced educational attainment has been shown to positively influence teachers' ICT competence, as postgraduate studies allow deeper engagement with curriculum planning, instructional strategies, and educational technologies (Kim & Soog Lee, 2020). Teachers with master's degrees often exhibit higher levels of ICT self-efficacy, which increases their likelihood of integrating technology into both teaching and administrative practices.

Teachers holding graduate degrees are also more inclined to explore innovative and technology-supported instructional approaches. Advanced academic training strengthens both theoretical understanding and practical application of ICT, enabling teachers to use digital tools more purposefully to enhance student engagement and learning efficiency (Wilson et al., 2020). This expanded competence supports teachers in adopting ICT not merely as a supplementary tool but as an integral component of instructional delivery.

Furthermore, teachers with higher educational attainment are better positioned to adapt to curriculum reforms that emphasize digital competence. Studies indicate that teachers with stronger academic backgrounds are more responsive to educational innovations and demonstrate greater consistency in ICT utilization in classroom practice (Lomos et al., 2023). Their extended exposure to research-based practices enables them to align instructional strategies with evolving curricular demands.

These findings align with the objectives of the MATATAG curriculum, which underscores the importance of teacher adaptability and readiness in a technology-driven educational environment. The curriculum highlights the role of teachers in facilitating meaningful learning experiences through effective ICT integration. Educators with advanced degrees are better equipped to meet these expectations, as higher

educational attainment enhances both pedagogical flexibility and technological competence required for successful curriculum implementation (Molla & Seyoum, 2022).

Years in Service

The findings showed that the largest proportion of teachers (36.11%) had been in service for 11 to 15 years, indicating that most respondents were mid-career professionals who had experienced substantial changes in instructional practices, including the increasing integration of ICT in schools. Teachers within this range of service have typically transitioned from traditional, teacher-centered instructional methods to more technology-supported approaches, requiring continuous adaptation of their pedagogical practices. Research indicates that teachers with moderate to extensive teaching experience are more capable of balancing traditional instructional strategies with emerging technologies, as they possess both pedagogical maturity and contextual classroom knowledge (Lomos et al., 2023).

Teachers in this group were likely exposed to ICT gradually from limited or basic usage during the early years of their careers to more advanced applications in recent years. This progression aligns with findings that teachers who have witnessed the evolution of educational technology develop adaptive strategies that support effective ICT integration without compromising instructional goals (Molla & Seyoum, 2022). Their familiarity with both conventional and modern teaching approaches allows them to implement technology in a more purposeful and pedagogically sound manner.

Closely following this group were teachers with 6 to 10 years of service (31.48%), suggesting a cohort that is relatively younger yet already well-established in the profession. Teachers in this stage are often described as being in a period of professional consolidation, where they actively refine instructional strategies while embracing innovations such as ICT-enhanced teaching. Studies suggest that educators with moderate experience are more receptive to technological change and more confident in experimenting with digital tools compared to novice or late-career teachers (Kundu et al., 2020).

The findings further reveal that teachers with 6 to 10 years of teaching experience were more predisposed to spearhead ICT integration in the classroom, particularly in response to the increased emphasis on technology within the MATATAG curriculum. This supports research indicating that teachers at this career stage demonstrate higher ICT self-efficacy and motivation to align their instructional practices with curriculum reforms that prioritize digital competence (Kim & Soog Lee, 2020).

In the Philippine context, recent demographic analyses indicate that many public high school teachers fall within the 7 to 15 years of teaching experience range, which commonly corresponds to the early to mid-career age bracket. Teachers in this developmental stage are considered to be in a favorable position for reflective practice and pedagogical improvement, as they possess sufficient experience while remaining open to innovation (Samoraga & Abo, 2025).

Exposure to ICT Subjects in College

The findings revealed that a large majority of the respondents (86.11%) had taken ICT-related courses during their college education, indicating that most teachers had been formally introduced to information and communication technology during their pre-service training. This high percentage suggests that many teachers had already acquired foundational ICT knowledge and skills prior to entering the teaching profession. Pre-service exposure to ICT is considered essential, as it equips teachers with basic competencies in using computers, digital tools, and software applications necessary for instructional and administrative purposes (Kundu et al., 2020).

This finding is significant because early exposure to ICT during college enables teachers to develop confidence and familiarity with technology, which are critical for effective classroom integration. Teachers who receive ICT instruction during their academic preparation are more likely to demonstrate readiness and competence in applying technology to teaching and learning processes (Kim & Soog Lee, 2020). Given the rapid pace of technological change in education, prior ICT coursework provides a strong foundation that supports continuous adaptation to emerging digital tools required in modern classrooms.

The results further imply that teachers who had ICT courses in college were better positioned to meet the demands of the MATATAG curriculum, which emphasizes the purposeful integration of technology to support learning outcomes. Formal ICT training enhances teachers' ability to utilize digital platforms, instructional software, and online resources, all of which are integral to the successful implementation of curriculum reforms that prioritize digital competence (Molla & Seyoum, 2022).

However, it is noteworthy that 13.89% of the respondents reported having no ICT-related courses in college, despite the increasing digitalization of education. This finding suggests that a portion of teachers may face greater challenges in adopting ICT-based instructional practices. Teachers without formal ICT training often experience lower confidence and competence in using technology, which may hinder their ability to comply with curriculum expectations that emphasize ICT integration (Lomos et al., 2023).

Teachers who lacked ICT coursework during their academic preparation may therefore require additional professional development to effectively utilize technology in the classroom. Studies emphasize the importance of targeted in-service training, workshops, and continuous professional development programs to support teachers with limited ICT backgrounds (Kundu et al., 2020). Without such interventions, these teachers risk falling behind in the transition toward digitally enhanced teaching practices.

Moreover, peer mentoring and collaborative learning among teachers can play a vital role in addressing gaps in ICT competence. Research indicates that school-based support systems, including collaboration with more ICT-proficient colleagues, can significantly improve teachers' confidence and skills in technology integration (Molla & Seyoum, 2022). Tailored ICT training programs for teachers with little or no prior exposure to technology would help ensure equitable ICT utilization across schools and support the inclusive implementation of the MATATAG curriculum.

Years of Hands-On Experience with ICT Prior to Teaching

The findings indicated that a majority of the respondents possessed significant hands-on experience with ICT prior to entering the teaching profession. Specifically, 66.66% of the teachers reported having 1–10 years of practical ICT experience, with an equal distribution of 33.33% having 1–5 years and 33.33% having 6–10 years of exposure. This result suggests that most teachers had already interacted with digital tools, software applications, and computer technologies before assuming teaching roles. Prior hands-on ICT experience has been identified as a key factor in strengthening teachers' confidence and competence in technology use, which positively influences classroom integration (Kim & Soog Lee, 2020).

Teachers who had prior ICT exposure were more likely to demonstrate self-efficacy and ease in using digital tools for instructional and administrative purposes. Research shows that teachers with practical ICT experience tend to utilize technology more frequently and more effectively, as familiarity reduces anxiety and increases willingness to experiment with digital instructional strategies (Lomos et al., 2023). This background may explain why many respondents were confident and efficient in integrating ICT into their classroom practices.

However, the findings also revealed that 23.15% of the teachers had no hands-on ICT experience prior to teaching, which may have posed challenges in fully adopting technology-based instruction. Teachers with limited or no prior ICT exposure often experience difficulties in navigating digital tools, resulting in lower levels of ICT utilization and increased resistance to technology integration (Molla & Seyoum, 2022). The absence of practical experience can hinder teachers' ability to align instructional practices with technology-driven curriculum demands.

Teachers lacking hands-on ICT experience may therefore require additional support mechanisms, such as focused training programs and sustained professional development. Studies emphasize that hands-on workshops and experiential learning opportunities are more effective than purely theoretical training in improving teachers' ICT competence (Kundu et al., 2020). Without adequate practice, teachers may struggle to transfer ICT knowledge into meaningful classroom applications.

Moreover, peer mentoring and collaborative learning among teachers play a crucial role in addressing disparities in ICT experience. Research indicates that teachers benefit significantly from school-based support systems where more ICT-proficient colleagues provide guidance and modeling of effective technology use (Molla & Seyoum, 2022). For the MATATAG curriculum to be successfully implemented, it is essential that all teachers—regardless of prior experience—are provided with opportunities to gain hands-on ICT exposure. Ensuring equitable access to practical ICT training will strengthen teachers' capacity to integrate technology effectively and support the curriculum's emphasis on digital competence.

ICT-Related Seminars and Trainings Attended

The findings indicated that a large majority of the respondents (93%) had participated in ICT-related seminars and training programs, demonstrating a generally high level of interest among teachers in developing their technological competence. This aligns with recent studies emphasizing that participation

in ICT training significantly improves teachers' readiness, confidence, and willingness to integrate technology into classroom instruction (Kim & Soog Lee, 2020). Teachers who attend ICT-related professional development activities are more likely to perceive technology as a valuable instructional tool rather than an added burden.

Despite this high participation rate, the findings revealed that ICT-related trainings were largely limited to designated ICT coordinators, which restricted the number of teachers who could directly benefit from these programs. Research shows that when ICT capacity-building initiatives are confined to a small group, the diffusion of technological skills across schools becomes uneven and less effective (Molla & Seyoum, 2022). Teachers who are excluded from formal ICT training often rely on self-learning or informal peer support, which may not be sufficient to develop advanced ICT competencies.

Economic constraints further limited teachers' participation in national-level ICT trainings, such as Virtual INSET and DICT seminars. Studies highlight that access to higher-level ICT training is often influenced by logistical and financial factors, particularly in developing educational contexts, where travel costs and limited funding restrict teacher participation (Lomos et al., 2023). As a result, only a few teachers were able to attend these national programs, despite their potential to expose educators to emerging technologies and advanced ICT practices.

The findings also showed that division-level seminars were more accessible, with the DepEd Computerization Program (DCP) seminar recording the highest attendance (2.78% or 3%). This suggests that teachers were more inclined to participate in trainings conducted closer to their schools and organized under official Department of Education initiatives. Division-level ICT programs have been found to be effective in improving teachers' basic ICT skills, particularly in administrative tasks and classroom management (Molla & Seyoum, 2022). However, such programs often focus on foundational competencies rather than advanced or innovative ICT applications.

Although many teachers reported attending ICT-related seminars, only a small number of teachers attended each specific training, indicating unequal access to professional development opportunities. This uneven distribution of ICT training can lead to disparities in teachers' ICT competence and confidence, which may affect the consistency of technology integration across classrooms (Kundu et al., 2020). Teachers who receive limited or fragmented training may struggle to apply ICT meaningfully, especially when curriculum reforms demand higher levels of digital competence.

Recent studies further emphasize that one-time or isolated ICT training sessions are insufficient to sustain effective technology integration. Continuous, hands-on, and context-specific professional development has been identified as a critical factor in strengthening teachers' ICT utilization (Hamalainen et al., 2021). Without follow-up support and opportunities for practice, teachers may fail to translate acquired ICT knowledge into actual classroom use.

To ensure the effective implementation of the MATATAG curriculum, it is essential to expand teacher participation in ICT-related seminars and training programs. Research underscores the importance of inclusive and sustained professional development initiatives that provide equal access to ICT training for

all teachers, regardless of position or designation (Lomos et al., 2023). Increasing participation in trainings that focus on emerging technologies and advanced ICT tools will help ensure that teachers are adequately equipped to meet the digital demands of contemporary education and support the successful realization of MATATAG curriculum goals.

Table 1. **Demographic profile of the Roxas South District teachers teaching MATATAG curriculum subject.**

CHARACTERISTICS	FREQUENCY (f)	PERCENTAGE %(n=108)
Age		
20-26	3	3.00
27-33	30	28.00
34-40	34	31.00
41-47	23	21.00
48-54	11	10.00
55-61	7	7.00
Civil Status		
Single	22	20.37
Married	85	78.70
Separated	1	0.93
Gender		
Male	27	25.00
Female	81	75.00
Educational Attainment		
College Graduate	68	62.96
Masteral	40	37.04
Years in Service		
'<1	5	4.63
1-5	8	7.41
6-10	34	31.48
11-15	39	36.11
16-20	8	7.41
21-25	8	7.41
26-30	3	2.78
31-35	2	1.85
36-40	1	0.93
Exposure to ICT Subjects in College		
Yes	93	86.11
No	15	13.89

If yes, please tick the box for the general descriptions of computer education:		
Basic Computer Literacy	92	98.92
Programming and Coding	11	11.83
Advanced Topics in Computer Science	1	1.08
Practical Applications	6	6.45
Office Productivity Tools	6	6.45
Networking and Cybersecurity	0	0.00
Others (Please Specify)	1	1.08
Years of Hands-on experience in ICT prior to teaching:		
None	25	23.15
1-5	36	33.33
6-10	36	33.33
11-15	10	9.26
16-20	0	0.00
21-25	1	0.93
ICT-related Seminars/Trainings Attended		
A Webinar Series on Fostering the "I" in AI: Exploring Modern Tools for AI in Education	1	0.93
Basic Computer Literacy Course	1	0.93
Cybercrime Prevention Act of 2012: Explained - Regional Level	1	0.93
DepEd Computerization Program Seminar- Division Level	3	2.78
DICT Seminar - National Level and DepEd Palawan ICT coordinators Training - Division Level	1	0.98
LAC	1	0.98
SLAC about ICT- School level	1	0.98
Use of Microsoft Office 365 - School Level	1	0.98
Video Presentation and Editing - School Level	1	0.98
Virtual INSET-National	1	0.98
Zip Grade - SLAC	1	0.98
ZIPGRADE - School Level	1	0.98

Teachers' ICT Utilization in the Implementation of the MATATAG Curriculum

System Technologies

The results on the utilization of system technologies (hardware and software) in the implementation of the MATATAG curriculum reveal varying levels of ICT integration, with basic and accessible technologies being used more frequently than advanced tools. Among the system technologies, smartphones used for communication with students and parents obtained the highest mean score (4.55), indicating that they were "often" utilized for daily school-related interaction. This finding highlights the

central role of mobile technologies in maintaining effective communication within the school community. Studies have shown that smartphones are among the most commonly used ICT tools in education because of their accessibility, ease of use, and effectiveness in facilitating real-time communication (Marcial & de la Rama, 2015).

Following smartphones, computers used for managing student records and monitoring extracurricular activities registered high mean scores of 4.24 and 4.20, respectively. These results emphasize the importance of computers in supporting teachers' administrative responsibilities and ensuring systematic documentation of student performance. Similar findings were reported by Flores et al. (2017), who noted that teachers frequently use computers for administrative and record-keeping purposes, as these tasks require reliability, accuracy, and efficiency rather than advanced technological expertise.

Printers emerged as another highly utilized system technology, with a mean score of 4.64, underscoring their essential role in producing instructional materials. Despite the growing emphasis on digital learning, printed materials remain indispensable in many classroom contexts, particularly in public schools where access to digital devices may be limited. This finding supports the observation that teachers often rely on traditional ICT tools that directly support lesson preparation and classroom instruction (Almekhlafi & Abulibdeh, 2018).

Moderately utilized technologies included recording devices (mean: 3.80) and smart televisions (mean: 3.81), which were used to enhance lesson delivery and student engagement. These tools contribute to multimedia-based instruction, which has been shown to improve learner motivation and attention when integrated appropriately into teaching practices (Olofsson et al., 2018). However, their moderate usage suggests that while teachers recognize their instructional value, factors such as availability, technical skills, or training may limit more frequent use.

Similarly, photocopiers (mean: 4.35) and scanners (mean: 3.37) were utilized primarily for document reproduction and digitization, reinforcing the finding that teachers prioritize ICT tools that support routine administrative and instructional tasks. Such tools are often easier to operate and require minimal technical training, making them more accessible to a wider range of teachers (Molla & Seyoum, 2022).

On the lower end of utilization were desktop computers (mean: 2.83), virtual reality tools (mean: 3.12), and computer-assisted instruction applications (mean: 2.74). These results suggest that teachers encountered challenges in integrating more advanced and specialized technologies into classroom instruction. Research indicates that the adoption of sophisticated ICT tools is often constrained by limited infrastructure, lack of training, and insufficient technical support, particularly in developing educational contexts (Lomos et al., 2023).

Graphic design and image-editing software such as Photoshop recorded the lowest mean score (2.75), indicating minimal use in regular teaching activities. This low utilization may be attributed to the specialized nature of such software, which requires advanced skills and is not essential for most subject areas. Similar findings have been reported, noting that teachers tend to avoid complex applications that are not directly aligned with curriculum demands or daily instructional needs (Kundu et al., 2020).

Overall, the findings indicate that teachers demonstrated strong competence in using basic ICT tools for communication and administrative purposes but showed limited utilization of advanced instructional technologies. This pattern suggests that while teachers can integrate essential technologies into their work, further capacity-building is needed to support the adoption of innovative digital tools. Consistent with earlier research, effective ICT integration requires continuous professional development, hands-on training, and institutional support to bridge the gap between basic and advanced technology use (Ghavifekr & Rosdy, 2015). Strengthening teachers' competencies in advanced ICT applications is therefore critical to maximizing the instructional potential of the MATATAG curriculum.

Table 2.1. **Teachers' ICT utilization in the implementation of the MATATAG curriculum in terms of system technologies.**

Utilization	Mean	Descriptive Rating
System Technologies		
I use a laptop with the latest version of software to easily manage student records and track academic progress.	4.24	Often
I use smartphones to interact efficiently with students and parents, such as in group chats.	4.55	Always
I use laptop to arrange and monitor student extracurricular activities, ensuring efficient scheduling and participation.	4.20	Often
I use recording devices to capture key teaching moments and provide additional learning materials for students.	3.80	Often
I use a smart television to provide dynamic presentations that improve student engagement and comprehension.	3.81	Often
I use public address systems, including microphones, to deliver clear and efficient announcements to teachers and students.	3.30	Sometimes
I use a desktop computer with the latest operating system/software to simplify administrative work and enhance school productivity.	2.83	Sometimes
I utilize a tablet and software tools to organize instructional materials and manage my workload efficiently. (Excel, word, PowerPoint, etc.	3.32	Sometimes
I utilize printers to create outstanding learning materials and transmit important documents to students and staff.	4.64	Always

Utilization	Mean	Descriptive Rating
I utilize scanners to digitize crucial papers for secure storage and rapid access.	3.37	Sometimes
I use photocopiers to efficiently duplicate and disseminate learning materials.	4.35	Often
My typing abilities allow me to work efficiently on the computer.	4.26	Often
I assist colleagues/students in discovering computer applications and software.	3.61	Often
I analyze students' progress and work on digital devices, offering focused guidance and criticism.	3.60	Often
I utilize Excel and spreadsheets to manage school budgets and evaluate data on student performance and resource allocation.	3.82	Often
I utilize Microsoft Excel for administrative work and accurate student records, ensuring effective information management.	4.27	Often
I utilize Microsoft PowerPoint to create compelling presentations that improve student learning and comprehension.	4.12	Often
I use graphic design and 3D animation technologies to develop visually engaging teaching materials.	3.07	Sometimes
I employ virtual reality software to provide immersive learning experiences that improve student engagement and retention.	3.12	Sometimes
I employ computer-assisted instruction technologies to improve teaching and offer tailored learning experiences for students. (Kahoot, Quizizz, Google Classroom, etc.)	2.74	Sometimes
I can install and remove software to keep the school's computer systems running smoothly.	3.05	Sometimes
I may use Photoshop versions and other photographic tools to generate and modify photographs for educational reasons.	2.75	Sometimes

Utilization	Mean	Descriptive Rating
I update software applications to keep the school's computer systems secure and efficient.	3.00	Sometimes
I use computers to efficiently provide comments on student assignments and projects, enhancing the quality of their work.	3.39	Sometimes
I utilize PowerPoint for engaging presentations in big classrooms, incorporating visual aids to improve student understanding.	3.92	Often
I use computer calculators to swiftly and accurately solve mathematical problems, assisting students with their learning.		
I utilize Excel to analyze student achievements, monitor progress, and identify areas for growth.	3.11	Sometimes
I integrate both commercial and free software into my teaching to enrich the curriculum and improve student learning.	4.06	Often
Weighted Mean		
	3.32	Sometimes
	3.63	**Often**

Legend:
4.51 − 5.00 Always
3.51 – 4.50 Often
2.51 – 3.50 Sometimes
1.51 – 2.50 Rarely
1.00 – 1.50 Never

Internet Technologies

The findings pertaining to the usage of internet technologies indicated that teachers generally used web-based tools and services in their teaching and administrative practices with a weighted mean of 3.82. These results show high use of online materials to facilitate communication, teaching, and schoolwork. Other studies have highlighted the importance of Internet technologies in improving instructional efficiency and promoting access to educational resources in nowadays schools (Flores et al., 2017). The most common tools were the use of email services (mean: 4.31), file-sharing platforms, e.g., Google Drive and Dropbox (mean: 3.61), and video-sharing sites like YouTube (mean: 4.03). The platforms that were used to distribute learning content, coordinate information on students, and enable communication between teachers, students, and parents became crucial. According to studies, teachers prefer easy-to-use and readily accessible online tools (which require little or no technical training) because they feel that these can be immediately utilized for instructional purposes in the learning context (Almekhlafi &

Abulibdeh, 2018). Furthermore, social networking sites (mean: 4.44) and file-sharing applications with Bluetooth (mean: 4.48) were the most utilized resources. This indicates that teachers were using popular online social networking as tools to enhance communication, collaboration, and the sharing and distribution of information in the school community. It has been found that social media and informal file-sharing platforms are frequently used in educational contexts due to people's socialization with these tools along with ease of use, which facilitated teachers' ongoing communication with students and stakeholders (Olofsson et al., 2018). On the other hand, the use of Learning Management Systems (mean: 2.77) and educational games and applications (mean: 3.34) was relatively low. This lower usage likely reflects unfamiliarity, poor training, or lack of institutional support for these applications. It has been shown in the literature that lack of training and low self-efficacy are key factors that impede effective utilization of structured e-learning systems like LMS systems (Molla & Seyoum, 2021). One potential explanation could be that teachers may view these platforms as more complicated in contrast to general internet tools, which leads to lower frequency of use. Utilization of blogging software (mean: 2.86) and submitting work via email (mean: 2.73) were also less used activities. This result indicates that there was use of email for general communication, but it had not been integrated into instructional practices such as homework submission and feedback. Research indicates that teachers tend to use some internet tools for basic communication activities, without exploring their full didactic potential (Lomos et al., 2023). Consistent with this gap, the relatively low frequency of use and moderate positive scores assigned to educational games/apps (mean = 3.34) suggest that teachers are restrained about integrating game-based learning in lesson plans. This hesitance may be due to limited access, lack of clarity about the instructional value, or difficulty connecting these tools to curricular goals. The literature suggests that teachers may use innovative internet tools less if they lack adequate instruction and curriculum alignment, despite an awareness of their potential benefits (Kundu et al., 2020).The high use of email, file-sharing systems, video hosting sites, and social media tools in general does, however, suggest that teachers made extensive use of internet technologies to support educational processes, communication, and student engagement. These instruments were particularly beneficial to remote and hybrid models of teaching and learning following the pandemic (Kim & Soog Lee, 2020). But the very low use of specific tools like learning management systems and educational applications demonstrates the need for purposeful PLD. Building teachers' communicative competence and confidence in utilizing these tools would facilitate learning more structured, interactive, effective lessons that can be used to better supplement the implementation of the MATATAG curriculum with a deeper infusion of internet technology for instruction.

Table 2.2. **Teachers' ICT utilization in the implementation of the MATATAG curriculum in terms of internet technologies**.

Utilization	Mean	Descriptive Rating
Internet Technologies		
I use wired and wireless networks to access various websites, which will have an impact on my administrative operations for controlling instructional procedures at school.	3.95	Often

Utilization	Mean	Descriptive Rating
I transmit information to teachers and parents using email services such as MS Outlook, Yahoo, or Google to enhance the management of educational processes at school.	2.96	Sometimes
I use educational platforms (Learning Management Systems like Moodle) to organize curricular activities and manage educational processes.	2.77	Sometimes
I use various social media tools, such as Facebook, Twitter, Instagram, MS Teams, Zoom, WhatsApp, videoconferencing, forums, online group chats, and YouTube, to organize online meetings and manage...	3.97	Often
I use games, such as Facebook games, and apps that provide educational resources (tutorials, open resources), to gather information that will help me manage the educational processes at school.	3.34	Sometimes
I use video-sharing services like YouTube.	4.03	Often
I use file sharing platforms like OneDrive, Google Drive, and Dropbox.	3.61	Often
I use photo-sharing platforms like Instagram and Facebook.	3.88	Often
I know how to use social networking sites like Facebook.	4.44	Often
I use file-sharing services like Bluetooth.	4.48	Often
I use blogging platforms such as blogs and bloggers.	2.86	Sometimes
I download materials from the internet when needed.	4.66	Always
I access email and other social networks using a computer.	4.31	Often
I communicate with learners via email, such as for online homework.	2.73	Sometimes
I use the internet to find materials for teaching and learning.	4.56	Always
I use the World Wide Web to find information for school or other assignments.	3.94	Often
I communicate with students, friends, and colleagues via email and chat rooms.	3.76	Often

Utilization	Mean	Descriptive Rating
I open, save, download, and print information from the internet.	4.57	Always
Weighted Mean	**3.82**	**Often**

Legend:
   4.51 – 5.00 Always
   3.51 – 4.50 Often
   2.51 – 3.50 Sometimes
   1.51 – 2.50 Rarely
   1.00 – 1.50 Never

Challenges in ICT Utilization in Education

The challenges faced by teachers in utilizing ICT in education at the teachers' level reveal several areas where educators encounter barriers to effective integration of technology into their teaching practices.

a. Teachers' Level

a.1. ICT Proficiency or Low Self-Efficacy

The data show that ICT proficiency or low self-efficacy was a big problem for teachers, with a weighted mean of 2.82, which means that this problem is "sometimes encountered". Teachers said they didn't know enough about computers and fundamental software and hardware, which made it challenging for them to use ICT effectively in their lessons. More than 20% of respondents said that not being good with ICT made it harder for them to achieve their teaching obligations. The lowest mean score in this category was 2.67. This meant that a lot of teachers didn't feel ready to use technology in their lessons, which made them less likely to use digital tools.

To tackle this issue, specialized training programs aimed at cultivating essential ICT competencies could have bolstered teachers' confidence and self-efficacy in technology use, thereby promoting a more significant integration of ICT into their pedagogical practices (Sharma & Srivastava, 2019).

a.2. Confidence or Teacher's Attitude and Beliefs About ICT

Another big problem was teachers' confidence and attitudes toward ICT. A weighted mean of 2.40 showed that teachers "sometimes encountered" trouble in accepting ICT. A lot of teachers said they were afraid of making mistakes when utilizing ICT and didn't have much trust in their ability to use new tools like learning management systems (LMS), interactive whiteboards, and educational software. The replies also showed that people were against change and had a bad attitude about ICT. This problem was made worse by the fact that people didn't know how ICT could help with schooling. Teachers were less inclined

to use ICT in their classes if they didn't believe it was useful. This shows that teachers needed professional development programs that not only taught them technical skills but also helped them change their ideas and feel more confident utilizing ICT. Fostering a good attitude towards technology was essential for enhancing the integration of ICT in education (Rajabion et al., 2019).

a.3. Academic Preparation and Pressure on the Teacher

The difficulty of preparing for school and the pressure to use ICT because of digitalization were big problems for teachers, with a weighted mean of 2.56 showing that this was "sometimes encountered." A lot of teachers thought that their academic background didn't prepare them well enough to use ICT in their teaching. Many people who answered said that the push to learn how to use digital technologies clashed with what they already knew. Teachers also said that their existing workload didn't provide them with enough time to learn how to use new ICT tools.

This challenge showed that schools and other educational institutions need to give teachers enough time to train and organized support to help them use ICT in their lessons in a way that works. Almekhlafi and Abulibdeh (2018) mentioned that not having enough academic preparation and not having enough time for professional development are two major problems that make it hard to integrate ICT into education. This shows how important it is to make sure that teachers have places to work where they can keep improving their ICT skills while still doing their jobs.

a.4. Teachers' Motivation

A weighted mean of 3.13 showed that teacher motivation to utilize ICT was a barrier, meaning that the problem was "sometimes encountered." Teachers said that there weren't enough reasons for them to fully utilize ICT in their lessons. Many teachers said that they often had to pay for ICT materials out of their own pockets, which put even more strain on their resources and may have made them less likely to use technology. Teachers also said that the unpredictable availability of ICT resources made them less likely to want to use ICT tools.

For ICT integration to work, schools have to give teachers enough help in the form of money and reliable access to the tools they need. Incentive schemes or institutional recognition for using ICT could have helped teachers get over this problem. Rajabion et al. (2019) stated that institutional support and incentive systems are very important for getting teachers to use ICT. This makes sure that teachers are both motivated and able to use technology in their lessons.

a.5. Knowledge in Troubleshooting

Another problem was that people didn't know how to troubleshoot and didn't have enough access to technical support, which got a weighted mean of 3.04. Teachers said they were annoyed when technical problems came up during lectures, especially when they didn't know how to fix things like broken laptops or problems with internet connections. This problem got worse since schools didn't have enough technical support, which meant that teachers had to make backup plans, which made their jobs twice as hard.

Teachers said they didn't trust technology because of these continual technical problems, which made them less confident in using ICT in their teaching.

Teachers encountered a variety of problems when using ICT, mostly due to their lack of ICT skills, confidence, academic preparation, and enthusiasm. Teachers' willingness to use ICT into their pedagogical methods was profoundly affected by their technical proficiency, attitudes, and external assistance. To solve these problems, it was important to offer full training programs that improved both technical abilities and confidence, as well as institutional support to ease workload stress and make sure that ICT resources and technical help were always available. Molla and Seyoum (2020) asserted that technical support is essential for sustaining teachers' confidence and efficacy in utilizing ICT, especially in alleviating the effects of unexpected technical challenges.

Table 3.1. **Teachers' challenges in ICT utilization in implementing the MATATAG curriculum at the teacher level.**

Variable	Indicator	Mean	Descriptive Rating
ICT Proficiency or Self-Efficacy			
	My lack of ICT proficiency hinders my ability to perform my teaching duties effectively.	3.06	Sometimes Encountered
	I lack basic computer skills and knowledge of software and hardware.	2.67	Sometimes Encountered
	I am inadequately prepared to utilize technology in my teaching lessons.	2.74	Sometimes Encountered
	Weighted Mean	**2.82**	**Sometimes Encountered**
Confidence or Teacher's Attitude and Beliefs About ICT			
	I fear making mistakes and have low self-confidence in using ICT.	2.59	Sometimes Encountered
	I resist change and have a negative attitude toward ICT.	2.07	Rarely Encountered
	I lack awareness and training on the benefits of ICT in education.	2.54	Sometimes Encountered
	I am uncomfortable using different types of educational technology (e.g., learning management systems, interactive whiteboards, educational software).	2.57	Sometimes Encountered
	Weighted Mean	**2.40**	**Rarely Encountered**
Academic Preparation and Pressure on the Teacher			
	My academic preparation for teaching was insufficient regarding ICT integration.	2.54	Sometimes Encountered

Variable	Indicator	Mean	Descriptive Rating
	The pressure to integrate ICT due to digitalization conflicts with my existing knowledge.	2.45	Rarely Encountered
	My current workload does not allow sufficient time for learning and implementing new ICT tools and resources.	2.70	Sometimes Encountered
	Weighted Mean	**2.56**	**Sometimes Encountered**
Teachers' Motivation			
	I believe there is insufficient incentive to fully utilize ICT in my teaching.	3.11	Sometimes Encountered
	I personally fund the purchase and use of various ICT materials for teaching.	3.54	Often Encountered
	Access to ICT resources necessary for effective ICT utilization in my classroom is unreliable.	2.75	Sometimes Encountered
	Weighted Mean	**3.13**	**Sometimes Encountered**
Knowledge in Troubleshooting			
	I lack technical problem-solving skills for common ICT issues (e.g., damaged computers, battery problems).	3.32	Sometimes Encountered
	I have insufficient access to technical support.	3.16	Sometimes Encountered
	I lack trust in technology, so I create backup plans which double my workload.	2.64	Sometimes Encountered
	Weighted Mean	**3.04**	**Sometimes Encountered**

Legend:
4.51 − 5.00 Always Encountered
3.51 – 4.50 Often Encountered
2.51 – 3.50 Sometimes Encountered
1.51 – 2.50 Rarely Encountered
1.00 – 1.50 Seldom Encountered

b. School Level

b.1. Infrastructure for ICT

The statistics show that schools still had a lot of problems with their ICT infrastructure. Respondents said that their schools' ICT infrastructure was bad, giving it an average score of 3.46, which means that these difficulties were "often encountered." Some of the key problems were: the equipment

needed to be better, the hardware was too old, and there weren't enough computer laboratories. Unreliable internet connections and frequent power outages have made these problems much worse. These issues made it hard to employ technology in the classroom and made it harder for learners to get digital learning materials. It was also reported that there weren't enough gadgets for the number of students, which meant that the ratio of students to available technology was off.

A major problem with using technology in education is that there isn't enough ICT infrastructure. Almekhlafi and Abulibdeh (2018) reported that inadequate infrastructure and inconsistent access to ICT resources might significantly hinder the prospective advantages of technology in education.

b.2. ICT Training Programs

The weighted mean of 3.34 for the ICT training programs showed that teachers were not happy with them and that they were "sometimes encountered." Teachers understood that ICT training is important for their professional advancement, but they said that the training didn't always give them real-world experiences. They had trouble making the most of ICT's potential since there weren't enough training materials, like information on how to use certain programs and how to incorporate them into their teaching. Also, teachers had trouble using the new abilities they gained because there wasn't any follow-up training following the first sessions.

These problems show that they need more complete and ongoing professional development programs. Andoh (2015) posited that follow-up training and hands-on help are very important for making sure that teachers can use ICT in their lessons.

b.3. Technological Leaders

The low weighted mean of 2.91 shows that there wasn't enough technological leadership at the school level. Most schools didn't have ICT coordinators or facilitators to help teachers with their needs, which meant there wasn't enough leadership to make sure that ICT was used well in the school. Teachers also said that the government wasn't doing enough to put ICT policies into action, which made it even harder to give advice and make plans. Without strong leadership and clear directions, teachers have a hard time using ICT well in their classes. This finding is in line with earlier work by Molla and Seyoum (2022), which showed how important it is for schools to have dedicated ICT leaders who can help teachers with the integration process and give them the help they need.

b.4. Support and Monitoring of Teacher's Growth

There was still difficulty with giving teachers enough help through monitoring and professional development. The mean score of 2.94 showed that teachers thought the administration's assistance for ICT implementation was not good enough. Even though there was professional training available, it was harder to keep ICT integrated into teaching practices because there wasn't a systematic means to keep an eye on and track how well it was being used. To make sure that ICT use was in line with the goals of the curriculum and that teachers were always getting better at utilizing it, good monitoring mechanisms are necessary.

This corroborates the findings of Andoh (2015), who underscored that monitoring and subsequent professional development are essential for sustaining the effective integration of ICT in education. It is hard to keep using ICT in the classroom without concrete ways to track success.

b.5. ICT Utilization Plans in the School's Policy

One of the main concerns was that school rules didn't make it apparent to use ICT. The average score of 2.96 showed that these problems are "often encountered." Because there were no defined rules on how to use ICT in the classroom. Schools didn't have a systematic way to do it. To make sure that ICT is used in classrooms in a way that lasts, there needs to be clear rules on how to use it and help must be present beyond training. The respondents also said that there were not enough follow-up and assistance after they finished ICT-related training programs, which made it increasingly tougher to use ICT well in schools. These results are consistent with the research conducted by Molla and Seyoum (2022), which highlighted the necessity of clearly articulated policies and ongoing assistance to guarantee that ICT integration transcends a mere temporary project, becoming a sustainable transformation in education.

The results show that using ICT in education, especially in the MATATAG curriculum, has a lot of potential, but there are big problems at the school level that make it hard to use it effectively. These problems are mostly caused by a lack of good ICT infrastructure, not enough teacher training, not enough technological leadership, and not having clear ICT policies at the school level. To fix these problems, schools will need to make targeted investments in infrastructure, set up structured and ongoing professional development programs for teachers, and strengthen leadership and support systems.

Table 3.2. **Teachers' challenges in ICT utilization in implementing the MATATAG curriculum at the school level.**

Variable	Indicator	Mean	Descriptive Rating
ICT Infrastructure			
	Our school's ICT infrastructure is poor; we need more and better equipment.	3.43	Sometimes Encountered
	Our ICT resources include obsolete or substandard hardware.	3.14	Sometimes Encountered
	Our school lacks sufficient computer laboratories.	3.73	Often Encountered
	Our school experiences insufficient or unreliable power supply.	3.21	Sometimes Encountered
	Our school's location has inadequate and slow internet signal reception.	3.31	Sometimes Encountered
	The ratio of students to available technology is unbalanced.	3.94	Often Encountered
	Weighted Mean	**3.46**	**Sometimes Encountered**

Variable	Indicator	Mean	Descriptive Rating
ICT Training Programs			
	We lack professional training in using applications for professional development and educational purposes.	3.37	Sometimes Encountered
	We lack sufficient ICT resources to motivate and enable teachers to use available applications.	3.45	Sometimes Encountered
	ICT related training does not provide hands-on practice and opportunities for experimentation with new technologies.	3.20	Sometimes Encountered
	Weighted Mean	**3.34**	**Sometimes Encountered**
Technological Leaders			
	The design of our educational system and IT-related curricula is inadequate.	3.19	Sometimes Encountered
	The government lacks sufficient support for implementing ICT policies.	3.43	Sometimes Encountered
	Our school does not have a designated ICT coordinator or facilitator who efficiently provides support to teachers.	2.12	Rarely Encountered
	Weighted Mean	**2.91**	**Sometimes Encountered**
Support and Monitoring of Teacher's Growth			
	The school administration doesn't provide enough support for ICT implementation.	2.57	Sometimes Encountered
	We lack professional training in using ICT applications for teaching.	3.23	Sometimes Encountered
	Our school does not have a system for monitoring and evaluating the effectiveness of ICT utilization initiatives.	3.03	Sometimes Encountered
	Weighted Mean	**2.94**	**Sometimes Encountered**
ICT Utilization Plans in the School's Policy			
	Our school's policy doesn't include comprehensive ICT integration plans.	2.89	Sometimes Encountered
	There are no clear guidelines for implementing ICT-related tasks.	2.88	Sometimes Encountered
	Inadequate follow-up and support after attending ICT training/programs.	3.12	Sometimes Encountered

Variable	Indicator	Mean	Descriptive Rating
	Weighted Mean	**2.96**	**Sometimes Encountered**

Legend:
 4.51 − 5.00 Always Encountered
 3.51 – 4.50 Often Encountered
 2.51 – 3.50 Sometimes Encountered
 1.51 – 2.50 Rarely Encountered
 1.00 – 1.50 Seldom Encountered

Relationship between the Demographic Profile of Teachers and their ICT Utilization in the MATATAG Curriculum

Age

The data indicated a substantial negative correlation between age and ICT utilization in system technologies ($r = -0.295$, $p = 0.002$), implying that younger educators were more inclined to employ ICT in the MATATAG curriculum. Younger teachers probably did this since they were used to and comfortable with digital technologies. They were probably part of the generation that grew up with technology. On the other hand, older teachers were less likely to use ICT because they didn't know how to use it well or didn't feel comfortable doing so, which led to lower usage rates. These findings corroborate prior study that emphasized the generational disparity in ICT utilization, indicating that younger educators demonstrated superior ICT skills and integration into pedagogical practices (Sharma & Srivastava, 2019).

Civil Status

There is a significant negative correlation between civil status and the use of ICT in system technologies ($r = -0.201$, $p = 0.037$). Married teachers were more likely to use ICT than single ones. This could have happened for a number of reasons, one of which is that married teachers may have been better at multitasking, managing classroom resources, and using ICT in their everyday lessons. The results indicate that the obligations and support structures inherent in married life could have affected a teacher's utilization of technology in their pedagogical practices, as married educators may have been more inclined to optimize procedures via digital tools. These results are consistent with the findings of Rajabion et al. (2019), which demonstrated that personal responsibilities and life circumstances, including marriage, can substantially influence a teacher's motivation and capacity to effectively incorporate technology.

Gender

There was no statistically significant correlation between gender and ICT use in the MATATAG curriculum. The r-value for system technologies was -0.076 and for internet technologies it was 0.000, therefore gender didn't seem to have a big effect on how teachers used ICT. This finding diverges from several research that identified gender disparities in the adoption and utilization of technology, wherein men educators occasionally shown greater confidence in employing digital tools. Nonetheless, in this study, the

absence of a significant link may be ascribed to equitable access to ICT resources for both male and female educators, alongside a more extensive initiative inside educational institutions advocating for gender equality in technology utilization (Ghavifekr & Rosdy, 2015).

Highest Educational Attainment

The results showed a strong positive relationship between the greatest level of education and the use of ICT in both system technologies (r = 0.125, p = 0.000) and internet technologies (r = 0.172, p = 0.000). Those who had master's degrees were more likely to use ICT in their teaching than those who simply had bachelor's degrees. This result indicates that advanced educational qualifications were associated with increased exposure to ICT during their studies, as well as a superior level of digital competence. Moreover, educators with elevated educational qualifications exhibited a greater propensity to embrace innovative technology aimed at augmenting their pedagogical practices and enhancing student learning results. These results are in line with what Kim and Soog Lee (2020) found: that higher levels of academic preparation led to more use of ICT and a stronger willingness to use digital tools in the classroom.

Years in Service

There was a strong negative relationship between how long someone had been in the service and how much they used ICT in system technologies (r = -0.319, p = 0.001). Teachers who had been working in the field for less time tended to use ICT more regularly. This may have been due to newer teachers being better at using current technology because they learned more about digital technologies in their teacher preparation programs. Conversely, seasoned educators might have developed pedagogical approaches that were not significantly dependent on technology and may have been less predisposed to transition from conventional teaching methodologies to more technology-oriented practices. This finding aligns with the research conducted by Sharma and Srivastava (2019), which indicated that younger and less experienced teachers were generally more at ease with integrating new technology into the classroom.

Exposure to ICT Subjects in College

There was a strong negative relationship between taking ICT subjects in college and using ICT in both system technologies (r = -0.249, p = 0.009) and internet technologies (r = -0.271, p = 0.005). Teachers who studied ICT in college were more inclined to use it in their lessons. This study confirmed the relevance of early exposure to ICT during teacher training, as it gave teachers the skills, they needed to use technology in their classrooms in a way that worked. This exposure likely led to greater confidence and competence in using digital tools in teaching, making it easier for teachers to incorporate ICT into their lessons. Prior research, including investigations by Kim and Soog Lee (2020), underscored that early exposure to ICT is essential for enhancing teachers' preparedness to integrate technology into their classrooms.

Years of Hands-on Experience in ICT Prior to Teaching

The correlation between years of hands-on experience in ICT prior to teaching and ICT utilization was positive but weak, with an r-value of 0.177 for system technologies and r = 0.087 for internet

technologies. These results suggest that having practical ICT experience before teaching was beneficial but did not strongly predict ICT utilization. Experience may have been a starting point for using technology in the classroom, but other things, such teacher training, support from the school, and availability to resources, probably had a bigger impact on how often ICT was used in teaching. This finding is consistent with Molla and Seyoum (2020), who observed that although prior familiarity with ICT is beneficial, extensive training and institutional support are more significantly associated with successful technology integration in educational settings.

The results of this study demonstrated that various demographic characteristics were significantly related to ICT utilization in the MATATAG curriculum. Age, marital status, greatest level of education, and exposure to ICT subjects in college were important factors that affected how teachers used ICT. Teachers who were younger, had more education, or had already studied ICT courses in college were more likely to employ ICT in their teaching. Married teachers and those with limited teaching experience demonstrated elevated levels of ICT utilization. These results corroborate the findings of Sharma and Srivastava (2019), which emphasized that demographic parameters such as age, marital status, and educational background are significantly associated with a teacher's preparedness to incorporate technology into the classroom.

Table 4. **Relationship between the demographic profile of teachers and their ICT utilization in the MATATAG curriculum.**

Demographic Characteristics / Technologies	System Technologies			Internet Technologies		
	r value	Crit value	Remarks	r value	Crit value	Remarks
Age	-0.295**	0.002	Significant	-0.156	0.107	
Civil Status	-0.201*	0.037	Significant	-0.172	0.076	
Gender	-0.076	0.435		0.000	1.000	
HEA	0.125	0.000		0.172	0.000	
Years in Service	-0.319**	0.001	Significant	-0.164	0.089	
Exposure to ICT Subject	-0.249**	0.009	Significant	-.271**	0.005	Significant
Year Hands-on to ICT	0.177	0.066		0.087	0.371	
System Technologies	1.000	0.000		0.727**	0.000	Significant
Internet Technologies	0.727**	0.000	Significant	1.000	0.000	

Legend: ** - significant at 1% LS   * - significant at 5% LS
0.81-1.00 - Very high   0.21-0.40 - Fair
0.61-8.80 – High   0.01-0.20 - Low
0.41-0.60 – Moderate   0.000 - No Relationship Exists

CONCLUSION

Based on the results of the study, the following conclusions were drawn:

1. The teachers were mostly younger to mid-career educators (27–40 years)**,** female, and married, with college degrees, 6–15 years of teaching experience**,** 1–10 years of prior ICT exposure, and attendance at ICT-related seminars.

2. While teachers effectively utilize basic system and internet technologies for communication, resource sharing, classroom management, and the limited use of advanced digital tools and specialized learning platforms, highlight the need for targeted and continuous ICT training to enhance their capacity to deliver more interactive and technology-integrated instruction under the MATATAG Curriculum.

3. The effective integration of ICT in the MATATAG Curriculum is hindered by teachers' limited ICT proficiency, low confidence, insufficient preparation, lack of motivation and troubleshooting skills, as well as school-level barriers such as weak infrastructure, inadequate training programs, absence of technological leadership, limited support and monitoring, and the lack of clear ICT utilization policies, underscoring the urgent need for sustained capacity-building and strengthened institutional support.

4. The results show that age, civil status, years in service, and exposure to ICT subjects have significant relationships with teachers' utilization of system technologies, indicating that younger, married teachers with fewer years in service and prior ICT exposure are more likely to apply system-based ICT tools in implementing the MATATAG Curriculum, while gender, highest educational attainment, and hands-on ICT experience show no significant influence. For internet technologies, only exposure to ICT subjects demonstrates a significant relationship with ICT utilization, suggesting that teachers who received ICT-related coursework are more proficient in using online tools and platforms in the MATATAG Curriculum, while age, civil status, gender, highest educational attainment, years in service, and hands-on ICT experience do not significantly affect internet-based ICT integration.

RECOMMENDATIONS

1. *To Teachers / Educators***,** the study highlights how vital it is for instructors to use ICT in the classroom. Teachers should take part in ICT-focused professional development programs to boost their IT skills and confidence. A lot of teachers know how to utilize basic ICT tools, but there is a noticeable divide when it comes to using more complex technology efficiently. By continuing their training, teachers can improve their technical abilities and learn about the newest tools and trends in education. Also, using ICT in innovative ways to create lectures can make learning more entertaining, participatory, and valuable for kids today. It's a good idea to share your experiences and help each other out because you will be working with other teachers. Teachers could also use some guidance from their peers who are more comfortable with ICT. This can give them more confidence to use it in their courses. Teachers can use the Coordinators League of ICT to network with each other, share best

practices, and improve their ICT abilities in a group context. The DICT may also help teachers by giving them training and technical tools to make sure they have the skills they need to do well in a classroom with technology. The MOOE Communication Allowance could also be used to help instructors get the resources they need for their professional development.

2. ***To the Department of Education (DepEd),*** Hence, DepEd should focus on creating ongoing, all-encompassing training for teachers that combines theoretical knowledge with hands-on, experiential learning. Schools would also benefit from having clear, organized rules on how to use technology in the classroom. To make sure that technology is helping kids learn better, it's crucial to keep an eye on how ICT is being utilized in classrooms on a regular basis. DepEd should also work with the DICT to make sure that schools have the latest technology. It is important to make sure that all schools have access to the newest technologies, a dependable internet connection, and adequate technical support. This is especially crucial in places that are hard to get to or don't have enough services, where the DICT can help with infrastructure and training.

3. ***To Learners,*** students are important for ICT to be accepted. The survey found that learners who are good at using digital tools are more likely to do well in school these days. That's why youth should learn how to utilize computers and other digital tools as soon as possible. Parents and teachers should work together to teach youngsters how to use the technology they will need for school. Students should also use technology for learning outside of class, such as completing research, working together, or learning at their own pace. Students who know how to use computers will do better in school and be ready for the work market, where knowing how to use technology is a must.

4. ***To Parents.*** Parents play a big role in helping their kids learn, especially when it comes to technology. Having technology in the classroom is crucial, but not all students have the same access to it. Parents should urge their kids to use computers sensibly and for schoolwork at home. This means that kids should spend less time in front of screens and more time using digital tools, online resources, and educational apps. Parents should also talk to teachers to find out what kinds of technology are being utilized in the classroom and how they can help their kids use them at home. Parents should also ask schools to provide their children with better access to technology and make sure they know how to utilize it well for schoolwork.

5. ***To Community Stakeholders,*** parent-teacher associations, local government, and private firms in the area need to work together to bridge the digital divide between cities and rural areas. The survey demonstrates that a lot of schools, especially those in distant locations, don't have the proper infrastructure to fully embrace ICT. Community members should collaborate with schools to get more resources, such as devices, consistent internet connectivity, and steady power sources. Local governments need to advocate for greater ICT infrastructure, especially in rural regions, so that every school may use it. In the community, tech leaders can help schools use ICT technologies well and assist both students and teachers. Businesses and other people in the community can also aid schools by giving them tech resources, teaching them how to use them, or starting mentorship programs to help students learn more about technology.

6. ***For Researchers,*** future research is necessary to comprehend the long-term effects of ICT integration on education and to identify any obstacles that were not thoroughly examined in this study. The results indicate that although ICT possesses significant potential to enhance educational outcomes, challenges persist in domains such as infrastructure, teacher readiness, and policy endorsement. Researchers ought to examine the obstacles to ICT utilization, particularly in rural educational institutions, and seek methods to guarantee equitable access to technology for all students. We need to do more research to find out how ICT affects how well students do in school and how well different teacher training programs work. These recommendations will help in crafting better ways to use ICT in the classroom that fit with the needs of the MATATAG curriculum.

REFERENCES

Almekhlafi, A. G., & Abulibdeh, E. S. A. (2018). K-12 teachers' perceptions of Web 2.0 applications in the United Arab Emirates. *Interactive Technology and Smart Education, 15*(3), 238–261. https://doi.org/10.1108/itse-11-2017-0060

Arciosa, R. M. (2022). Information communication technology (ICT)-based instructional software and its effectiveness in teaching high school geometry. *Indonesian Journal of Teaching in Science, 2*(1), 51–60. https://doi.org/10.17509/ijotis.v2i1.45271

Asad, M. M., Hussain, N., Wadho, M., Khand, Z. H., & Churi, P. (2020). Utilization of e-learning technologies for interactive teaching and learning process: An empirical study on higher education institutes of Pakistan. *Journal of Applied Research in Higher Education.* https://doi.org/10.1108/jarhe-04-2020-0103

Buabeng-Andoh, C. (2015). ICT usage in Ghanaian secondary schools: Teachers' perspectives. *Campus-Wide Information Systems.* https://doi.org/10.1108/ijilt-09-2015-0022

Chinasa, O. I. (2022). Challenges in the teaching and learning of computer studies in rural secondary schools in Igboeze North L.G.A. of Enugu State. *ESCET Journal of Educational Research and Policy Studies.* https://journal.escetjerps.com/index.php/escjerps/article/view/95

Delgado, A., Wardlow, L., O'Malley, K., & McKnight, K. (2015). Educational technology: A review of the utilization, resources, and effectiveness of technology in K-12 classrooms. *Journal of Information Technology Education: Research, 14,* 397–416. https://doi.org/10.28945/2298

Ekberg, S., & Gao, S. (2018). Understanding challenges of using ICT in secondary schools in Sweden from teachers' perspective. *The International Journal of Information and Learning Technology, 35*(1), 43–55. https://doi.org/10.1108/ijilt-01-2017-0007

Ghavifekr, S. (n.d.). Teaching and learning with technology: Effectiveness of ICT utilization in schools. *ERIC Database.* https://eric.ed.gov/?id=EJ1105224

Gil-Flores, J., Rodríguez-Santero, J., & Torres-Gordillo, J. J. (2017). Factors that explain the use of ICT in secondary-education classrooms: The role of teacher characteristics and school infrastructure. *Computers in Human Behavior, 68,* 441–449. https://doi.org/10.1016/j.chb.2016.11.057

Kim, J., & Lee, K. S. S. (2020). Conceptual model to predict Filipino teachers' adoption of ICT-based instruction in class: Using the UTAUT model. *Asia Pacific Journal of Education, 42*(4), 699–713. https://doi.org/10.1080/02188791.2020.1776213

Kubota, K., Yamamoto, R., & Morioka, H. (n.d.). Promoting ICT education in developing countries: Case study in the Philippines. *ResearchGate.* https://www.researchgate.net/publication/228655099_Promoting_ICT_education_in_developing_

countries_Case_Study_in_the_Philippine?_tp=eyJjb250ZXh0Ijp7InBhZ2UiOiJwdWJsaWNhdGlvbiIsInByZXZpb3VzUGFnZSI6bnVsbH19

Kundu, A., Bej, T., & Dey, K. N. (2020). An empirical study on the correlation between teacher efficacy and ICT infrastructure. *The International Journal of Information and Learning Technology, 37*(4), 213–238. https://doi.org/10.1108/ijilt-04-2020-0050

Lindberg, J. O., Olofsson, A., & Fransson, G. (2017). Same but different? An examination of Swedish upper secondary school teachers' and learners' views and use of ICT in education. *Campus-Wide Information Systems.* https://doi.org/10.1108/ijilt-09-2016-0043

Lomos, C., Luyten, J. W., & Tieck, S. (2023). Implementing ICT in classroom practice: What else matters besides the ICT infrastructure? *Large-Scale Assessments in Education.* https://doi.org/10.1186/s40536-022-00144-6

Lorenzo, A. R. (2016). Effectiveness of the computer and internet literacy project in public high schools of Tarlac Province, Philippines. *Semantic Scholar.* https://www.semanticscholar.org/paper/Effectiveness-of-the-Computer-and-Internet-Literacy-Lorenzo/ce3ed716f2ee1dc13a857692776c6b9c09ea8d1d

Marcial, E., & de la Rama, J. (2015). ICT competency level of teacher education professionals in the Central Visayas Region, Philippines. *Asia Pacific Journal of Multidisciplinary Research, 3.*

Mirzajani, H., Mahmud, R., Fauzi Mohd Ayub, A., & Wong, S. L. (2016). Teachers' acceptance of ICT and its utilization in the classroom. *Quality Assurance in Education, 24*(1), 26–40. https://doi.org/10.1108/qae-06-2014-0025

Molla, S., & Seyoum, Y. (2022). Status of ICT utilization in secondary schools: Dire Dawa City Administration in focus. *Education Research International.* https://doi.org/10.1155/2022/8752809

Obillos, D. R. J. P. (n.d.). Experiences, perceptions and attitudes on ICT utilization: A case study among novice and experienced language teachers in the Philippines. *ERIC Database.* https://eric.ed.gov/?id=EJ1124823

Olofsson, A., Lindberg, J. O., & Fransson, G. (2018). Learners' voices about information and communication technology in upper secondary schools. *Campus-Wide Information Systems.* https://doi.org/10.1108/ijilt-09-2017-0088

Pourkarimi, J., & Nazarzadeh Zare, M. (2016). The assessment of ICT literacy of Iranian teachers through the ISST model. *The International Journal of Information and Learning Technology, 33*(4), 236–247. https://doi.org/10.1108/ijilt-12-2015-0038

Rajabion, L., Wakil, K., Badfar, A., Mojtabavi Naeini, S., & Zareie, B. (2019). A new model for assessing the impact of ICT and digital knowledge on learners' thoughts and beliefs. *Journal of Engineering, Design and Technology, 17*(5), 943–959. https://doi.org/10.1108/jedt-01-2019-0008

Salleh, S. (2016). Examining the influence of teachers' beliefs towards technology utilization in the classroom. *The International Journal of Information and Learning Technology, 33*(1), 17–35. https://doi.org/10.1108/ijilt-10-2015-0032

Serdyukov, P. (2017). Innovation in education: What works, what doesn't, and what to do about it? *Journal of Research in Innovative Teaching & Learning.* https://doi.org/10.1108/jrit-10-2016-0007

Sharma, L., & Srivastava, M. (2019). Teachers' motivation to adopt technology in higher education. *Journal of Applied Research in Higher Education.* https://doi.org/10.1108/jarhe-07-2018-0156